THE ROYAL COMMISSION ON WHISKY AND OTHER POTABLE SPIRITS.

In February, 1908, a Royal Commission was appointed to inquire whether in the general interest of the consumer or in the interests of the public health, or otherwise, it was desirable—

(*a*) To place restrictions upon the materials or the processes which may be used in the manufacture or preparation of whisky in the United Kingdom;
(*b*) To require declarations to be made as to the materials, processes of manufacture or preparation, or age of any such spirit;
(*c*) To require a minimum period during which any such spirit should be matured in bond; and
(*d*) To extend any requirements of the kind mentioned to any such spirit imported into the United Kingdom,

and to make similar inquiry with regard to other kinds of potable spirits manufactured in or imported into the United Kingdom.

Whisky.

In June, 1908, the Commission issued a preliminary report which contained the following conclusions:

1. That no restrictions should be placed upon the processes of, or apparatus used in, the distillation of any spirit to which the term "whisky" may be applied as a trade description.
2. That the term "whisky" having been recognized in the past as applicable to a potable spirit manufactured from (1) malt, or (2) malt and unmalted barley or other cereals, the application of the term "whisky" should not be denied to the product manufactured from such materials.

The consideration of the question of the advisability of attaching special significance to particular designations such as Scotch whisky, Irish whisky, grain whisky, and malt whisky, and of restricting or requiring the use of such designation was postponed. These subjects, together with many general matters connected with the manufacture and sale of whisky and other spirits, are discussed in the Final Report of the Commission issued on August 9th.

The report quotes the general conclusion of the Select Committee of the House of Commons on British and foreign spirits which sat in 1890–1891 under the presidency of Sir Lyon Playfair. This committee recommended that increased restrictions should not be placed on blending spirits, that compulsory bonding was not necessary, that a limit of age should not be fixed, and that no provisions as regards adulteration were required beyond those already available.

Historical.

Although evidence derived from various statutes proved that spirit was distilled from grain in Scotland as early as the sixteenth century, and that in the seventeenth century the method in use did not differ essentially from that practised in the pot-still distilleries of Scotland at the present day, the statutes showed also that aqua vitae was not the exclusive product of malted barley, but that other substances, such as unmalted grain, were also used in the early days of distillation in Scotland. The term "whisky" is not used in any of the statutes, and does not seem to have been employed until the latter part of the eighteenth century. After reviewing the evidence as to the materials used, the Commission expresses the opinion that, though the flavour obtained by the distillation of spirit from a mash of which maize is the principal constituent differs materially from the flavour obtained from a mash of malt or malt and unmalted barley, there is no valid reason for excluding the use of maize in the manufacture of whisky, since there is no evidence that maize is not a perfectly wholesome material.

Manufacture.

As to its mode of manufacture, the Commission states that the claim put forward that the pot-still product alone has the prescriptive right to be called whisky is based upon the fact that until about 1830 all whisky was manufactured in pot-stills, but it holds that a product does not lose its name because an improved, or even altered, mode of manufacture is employed.

The three processes in common use for the production of whisky—the Irish pot-still, the Scotch pot-still, and the patent-still process—have certain points in common, since each involves the following three operations: (1) Mashing for the preparation of a liquor technically termed "wort"; (2) fermentation of the wort for the preparation of a liquor called "wash"; (3) distillation of the wash for the separation of the spirit.

Mashing.—The materials used have been restricted in practice to malt, and to unmalted cereals, such as barley, maize, oats, rye, and wheat. In the manufacture of pot-still whisky in Scotland, barley malt is generally the only material used, but in Ireland it is usual to employ a mixture of barley malt and unmalted barley, oats, wheat, and rye, maize being generally excluded; four-fifths of the whole usually consists of barley, malted and unmalted. In the patent-still process the materials employed in the mash are much the same in both Scotland and Ireland. Malt, maize, barley, rye (malted and unmalted), and oats being used in varying proportions. In one Scotch distillery the mash was made up of 25 per cent. malt, 72 per cent. maize, and 3 per cent. oats; in another of 30 per cent. malt, 30 per cent. rye, and 40 per cent. maize. In one Irish distillery it consisted of 35 per cent. malt, and 65 per cent. of a mixture of barley and maize; in another, malted barley, rye and maize were used in the proportions of 28, 36, and 36 per cent. respectively. The next stage is the same in all cases, the mixture is crushed and extracted with hot water, the starch of the grain being more or less converted into sugar by the diastase of the malt. Other substances are at the same time obtained in solution from which the secondary constituents of the finished whisky are both directly and indirectly derived. The exact nature of these substances is not yet thoroughly understood. Dr. Bell, from his investigations made for the Select Committee of 1891, concluded that some of the essential oils naturally existing in the malt and grain, and the pyro and creosotic bodies with which the malt becomes impregnated during the process of drying over peat, anthracite, or coke fires, pass through the operations in a more or less chemically unchanged condition, thus imparting distinctive characters to the whisky. This is especially the case when the usual forms of pot-stills are employed for the distillation. As already stated, the liquor resulting from the mashing process is technically termed "wort."

Fermentation.—The wort, cooled to a suitable temperature, is introduced into the fermenting vessels and yeast added. The yeast converts the sugar existing in the wort into ethylic alcohol, and under the combined influence of the yeast and the diastase left in the wort the whole of the products derived from the starch of the grain during the mashing process are ultimately fermented. At the same time certain other constituents of the wort undergo chemical change, giving rise to substances which influence the flavour of the finished whisky. Foremost among these substances are the higher alcohols, which have recently been shown by Ehrlich and others to owe their origin to the splitting up of certain nitrogenous substances (amino-acids) produced in the first place by the peptonizing action of the malt in the mashing process. The special nature of the yeast, the temperature at which it works, and the time occupied in fermentation are all factors which affect the ultimate result. The liquor resulting from the process of fermentation is technically termed "wash."

Distillation.—The wash is heated in a suitable vessel known as a still. The alcohol and secondary constituents pass over from the wash to a worm or cooling apparatus, are there condensed, and are finally received into another vessel. Originally, the report states, the object of distillation, as applied to potable spirits, was no doubt the separation of the more volatile constituents from the less volatile and non-volatile constituents of the wash. In the course of time, however, it came to be recognized that by modifying the form of still, by collecting the distillate in fractions and not as a whole, and by redistilling, the more valuable portions of the spirit could be obtained in a more concentrated form; and that, in addition, the quality of the whisky could be improved. Thus the distillation process not only involves the separation of the more volatile products of the wash, but the concentration and rectification of those bodies.

Scotch Pot-Still.—The simplest varieties of the pot-still are used in Scotland; usually they are heated by direct fire, though in some cases steam pipes and steam jackets are used. As to whether the one or the other method has an important effect upon the character of whisky opinions differ, some authorities holding and others denying that the open fire causes a charring of the organic substances

in the wash which has the effect of adding empyreumatic bodies to those already present in the wash. In Scotland two distillations are employed. The first distillate, called "low wines," contains all the alcohol and secondary constituents, together with some water. From the second distillation three fractions are obtained. The first is termed "foreshots," the second is the clean or finished whisky, the third is called "feints." The judgement and experience of the distiller determines the point at which the collection of foreshots is stopped and that of whisky commenced, and similarly that at which the latter is stopped, and the collection of feints begun. The strength at which the whisky fraction is run is of great importance to the character of the spirit; in Scotland it is generally from 11 to 25 degrees above proof. The foreshots and feints are mixed together and added to the low wines for the next distillation, the feints from the last distillation of the season being kept for adding to the low wines from the first distillation of the next season. In some distilleries in Scotland, especially those in the Lowlands, whisky is produced from three distillations, and the spirit is then run at 40 to 45 degrees over proof.

Irish Pot-Still.—The pot-stills employed in Ireland are generally much larger than in Scotland. Three distillations appear to be universally practised, and the whisky fraction is usually run at from 25 to 50 degrees over proof. Both in Ireland and in Scotland soap may be used to prevent frothing in the wash still, and charcoal in the low wines still for purifying purposes.

Patent-Still.—This still as used at the present day has two columns, called the rectifier and the analyser. Each column is subdivided horizontally into a number of wooden chambers with perforated copper floors In the process of manufacture both columns are filled with steam and the wash is pumped to near the top of the rectifier and traverses a pipe which goes to the bottom of the rectifier, passing each chamber twice. The wash, which at the base of the rectifier is almost at boiling point, passes through a continuation of the same pipe to the top of the analyser, where it is discharged on to the perforated plate forming the base of the top chamber. As the ascending steam in the analyser is under pressure the wash cannot pass through the small perforations, but fills the top chamber and then overflows through a small drop pipe on to the plate of the next lower chamber. As it traverses the analyser the wash is gradually deprived of its alcohol and other volatile constituents. The alcoholic vapours mixed with steam are then conducted to the rectifier, where they are cooled, with the result that the less volatile constituents condense and fall to the base of the rectifier and pass thence into the "hot feints "receiver. At a certain point in the rectifier a temperature prevails which roughly corresponds to the condensation temperature of strong ethylic alcohol, which is collected in a chamber on a non-perforated plate called "the spirit plate"; in practice, if the still be working properly, the pure spirit when once it has commenced to flow, runs continuously until the close of the distillation. At the beginning and end of the distillation when the spirit is not of sufficient strength it is allowed to pass into the feints receiver and pumped back into the still. The hot feints, consisting of a mixture of weak ethylic alcohol with an excess of fusel oil, are pumped continuously throughout the distillation to the analyser and there redistilled. Each distilling period occupies two or three days, and at its end the fusel oil can be removed from the hot feints receiver by adding water when the fusel oil rises to the surface, and may be skimmed off.

On examining a sample of fusel oil which he obtained from a patent-still distillery producing "grain" whisky, Dr. Bell ascertained that it was composed as follows (Report of 1891):

Amylic alcohol	...	...	...	42.2 per cent.
Butylic alcohol	...	...	...	33.4 ,,
Propylic alcohol	...	...	...	18.9 ,,
Ethylic alcohol	...	...	...	5.5 ,,

Dr. Bell further found that the "hot feints" from a patent-still distillery are remarkable for the amount of alcohol compounds of palmitic and oleic acids which they contain, and which are no doubt derived from the essential oils contained in the grain used in the production of the wash. As the steam passes through the descending wash in the patent-still the oils become decomposed, and the fatty acids uniting with ethylic alcohol form palmitate and oleate of ethyl.

Analyses of Whisky.

The Commission, after considering analyses of large numbers of Scotch pot-still whiskies and of a few Irish presented to it by witnesses, states that chemical methods fail to establish any definite relationship between the composition of the different varieties and the particular character they possess as regards flavour and aroma, some of the secondary constituents which exercise an important influence upon these qualities being present in such minute quantities as to render identification impossible. Upon this point the Commission states that of those constituents which have been identified many are allied in chemical constitution and properties, and can consequently be grouped together as families of similar substances—for example, acids, aldehydes, esters (compound ethers), and "higher alcohols," that is, alcohols higher in the homologous series than ethyl alcohol, and it is the total quantities of these families of allied subtances that are ordinarily estimated in an analysis.

The analyses showed that there was a very wide variation between pot-still whisky, not only from different distilleries but also between whiskies from the same distillery in different years. No relationship, however, was discernible between the analytical results and the characteristic flavours of the spirits from which they were respectively obtained.

Owing to the nature of the process in the patent-still the secondary constituents in the whisky so made are fewer in number and generally less in total amount, and as a matter of fact the Commission states that the great bulk of patent-still whisky is specially manufactured for blending with pot-still spirits. One source of the loss of flavouring constituents in the patent-still process is the separation of fusel oil through the hot feints; but it is stated that Dr. Bell pointed out another as a result of the special investigations which he carried out for the Select Committee of the House of Commons. In the course of some experiments in connexion with the changes which go on in the secondary constituents in whiskies during maturation, he separated the empyreumatic and other substances from the new pot-still whisky, and from a series of samples of the same kind of whisky bonded for different periods, and he found that those in the new spirit possessed an unpleasant odour combined with a malt flavour, but that those from the bonded spirits became more and more agreeable with increase of time of bonding. On making similar experiments with patent-still whiskies, he found that they were practically free from empyreumatic bodies even when new.

Medical.

The Report then proceeds to review the medical evidence. It seems desirable to quote the whole of this part in full:

"A number of witnesses gave evidence with regard to the possible deleterious action of different varieties of whisky. This evidence may be divided into two groups, first, that in which the witness was expressing a mere personal opinion, or was stating that which he believed to be an opinion held by a number of other persons. These opinions were usually based on effects said to be observed as a result of the consumption of some particular variety of whisky. Certain witnesses stated that it was a matter of common knowledge that deleterious effects were attributable to particular varieties of spirit, but in support of such statement we were unable to elicit from any witness direct and conclusive evidence resting on observations conducted with any approach to scientific accuracy.

"In the second group may be included the evidence of a smaller number of witnesses who had conducted experiments with scientific methods. The general tendency of the limited evidence thus given was to show that no conclusive proof of any special deleterious action could be attributed to any special variety of whisky.

"The action of whisky or other spirit on the human subject is necessarily very complex, and depends, not only on the quantity consumed and on the fact or extent of dilution, but also on the idiosyncrasy of the individual consumer.

"Many witnesses were inclined to attribute differences in the action of the spirit, and especially the production of deleterious effects, to differences in the nature and quantity of the secondary products, such as higher alcohols, ethers, furfural, etc.

"There are great individual differences not only between 'pot-still' and 'patent-still' spirit in these respects, but also between different varieties of 'pot-still' and different varieties of 'patent-still' spirits. Although the differences between some of the 'pot-still' and 'patent-still' whiskies are very great, yet it is difficult to draw a hard and fast line between them, inasmuch as some patent-still spirit may contain a higher proportion of some of these secondary products than some varieties of pot-still. This adds materially to the difficulty of determining whether there are any broad points of difference in the physiological effects produced by pot-still and patent-still spirits respectively. Further, a highly flavoured spirit may cause effects not obtained from one of less flavour owing to the effects which may be produced indirectly by the flavouring agent on the nervous system of the consumer, since many substances are known to produce marked effects on the digestive system merely as a result of the sensation produced by their flavour. In addition, a difficulty presents itself in the fact that a highly flavoured spirit is often partaken of in greater dilution than one containing a smaller proportion of secondary products.

"The evidence before us failed to establish that any particular variety of whisky was especially deleterious. Statements were not uncommonly made that new spirits and the cheaper variety of spirits consumed, for instance, at fairs, were specially liable to be deleterious and to cause some of the more severe symptoms associated with intoxication. This evidence generally amounted to little more than a mere statement, and we were unable to obtain proof within the personal cognizance of the witnesses. In some instances we were informed that it was the custom in certain distilleries for the workmen to consume new spirit, and that no specially deleterious effects had been observed to follow. On the other hand, it would seem that spirit when new is apt to develop an unpleasant taste, and therefore would be rejected by many.

"Dr. Thorpe gave us information as to the composition of a large number of whiskies which had been obtained by excise officers at fairs and public-houses in low-class districts in England, Scotland, and Ireland. The majority of the samples appear to have been merely new patent-still whiskies of an ordinary type, but a few in parts of Ireland were pot-still whiskies. We were unable to obtain evidence pointing to the presence of any known deleterious substances in excessive quantity in these spirits, or that any foreign substances had been added to them.

"The general tendency of the evidence on these matters was to show that any specially evil effects observed were rather to be attributed to the excessive quantity consumed than to any specially deleterious substance.

"We also failed to obtain any evidence from medical witnesses with reference to the question whether particular diseases, known to be due to the excessive consumption of spirits, could be attributed in different degrees to any particular variety of spirit. There are many districts where large hospitals exist in the midst of a poor neighbourhood, where it is known that cheap varieties of spirit are sold, and although in such hospitals the evil effects of alcoholism are frequently observed, and there are many instances of disease due to alcohol, yet the medical men observing these cases have not associated particular diseases with varieties of spirits.

"Some of the witnesses made the statement that patent-still whisky might possibly in certain instances be deleterious owing to the fact that such spirit might be distilled from damaged materials, and that these damaged materials might contain injurious and poisonous substances, but this statement was not made on any direct evidence that such ill effects had in any instance been observed. Although poisonous substances are known to exist in some grains as a result of disease of the grain, yet there was no evidence that such substances can pass over in the distillate obtained from the product of the fermentation of such grain. We were unable to obtain any definite evidence pointing to the presence of poisonous ingredients in the distillate derived from damaged material.

"A further question still presented itself, whether, of the varieties of whisky produced by the pot and patent still, one could be said to be more unwholesome than the other. Several witnesses expressed the opinion that the products of the patent-still were injurious to health, or produced intoxication more readily or in a more violent form than pot-still whisky, and that this might in part be due to the fact, as they alleged, that patent-still spirit produced a greater craving and a greater thirst than the pot-still spirit. These statements appear, however, to be merely a general impression derived from hearsay. On the other hand, a number of witnesses stated, some from personal experience, that the consumption of pot-still whisky was liable to induce ill effects—such as indigestion and subsequent headache—and that this was specially to be observed in persons leading a sedentary life. The experience of most witnesses seemed to point to the conclusion, in which we concur, that whisky derived from patent and pot still induces much the same effects if taken in the same quantity and in the same alcoholic strength.

"The only constituent of great importance from a hygienic point of view was stated by most of the scientific witnesses to be ethylic alcohol, the secondary products being of importance mainly in giving flavour to the spirit. A few witnesses held the opinion that the secondary products might produce slight effects other than those dependent on the mere flavour, but there was a conflict in the evidence of scientific witnesses on this point, and it was agreed that such effects, if any, were slight in amount. Further, certain witnesses examined the effects of large quantities of secondary products upon themselves and found, not only no difference between those prepared from patent and pot still whisky respectively, but that such secondary products, even when taken in large quantity, produced little or no effect.

"A number of witnesses laid considerable stress on the fact that pot-still whisky could be drunk with greater degree of dilution than patent-still whisky, and that therefore pot-still whisky might be a more satisfying and less dangerous beverage.

"It must also be borne in mind that the difference in the amount of secondary products present in the whisky produced by the pot-still and patent-still processes is not very great, and that therefore the actual amount of these secondary products in the quantity of whisky usually consumed is small, and hence the physiological effect produced by these secondary products must also be small compared with the effects produced by the ethylic alcohol itself.

"Although the higher alcohols which constitute a portion of the secondary products present in whisky have themselves a different physiological action from that produced by ethylic alcohol, and this action is a more harmful one, yet the actual quantity of these substances present in whisky is relatively so small compared with the quantity of ethylic alcohol, that the action of the spirit when consumed is almost, if not entirely, dependent on the ethylic alcohol. One witness was of opinion that the presence of secondary products in whisky led to the more rapid absorption of the spirit, but this conclusion did not seem to rest on any valid evidence.

"With regard to the medicinal use of spirits, it would seem that there has been a tendency of recent years to employ whisky to a larger extent than formerly; but the practice in different parts of the country and in different hospitals varies. Formerly, brandy was undoubtedly employed, both dietetically and therapeutically, in the treatment of disease to a greater extent than at present. Whisky has displaced brandy to a greater extent in dietetic treatment than in the treatment of acute diseases. In London from five to ten times as much brandy is ordered in hospitals as whisky, although, as the evidence shows, there is considerable variation in the practice of different physicians at different hospitals. The bulk of these spirits, if not the whole of them, would be prescribed in the course of treatment of acute diseases. In Scotland whisky is used to a greater extent even than in England. Most of the medical witnesses recommended that the spirits used in the treatment of disease should be of good quality and old. Some considered that pot-still whisky was preferable for this purpose to the patent-still variety, as they considered that more powerful medicinal properties were possessed by it

owing to the larger percentage of secondary products. The majority of medical witnesses attached no importance to the question whether the whisky were pot-still or patent-still, and considered that the value of it in the treatment of disease depended essentially on the ethylic alcohol. This view was held by the majority of observers who had directed their attention to the subject, and some adduced definite evidence in support of the statement that no difference in the results obtained could be attributed to the mode of preparation of the whisky. We concur in this view.

"With regard to the dietetic use of whiskies, all the medical witnesses were agreed that flavour plays a part of considerable importance, since a whisky that is unpalatable tends to interfere with digestion, while a whisky that is agreeable to the patient may increase the activity of the digestive processes, and also exert a favourable mental effect quite apart from the direct effect dependent on the alcohol itself. On this account they held not only that a mature whisky is preferable to a new whisky, but also that whiskies of different flavours may have a particular dietetic value in particular instances."

Blending.

The Commission states that blending, that is to say, the admixture of patent-still with pot-still spirit has been in use on a large scale both for the English and foreign markets for between thirty and forty years. It produces a more mildly flavoured and generally a cheaper article than the "self-whiskies," as the individual pot-still whiskies are commonly called, since the patent-still spirit costs less to manufacture. The Report adds that the market for blended whiskies is greater than that for the individual whiskies; so much so, that it would probably be safe to say that the majority of Englishmen who drink whisky seldom drink anything but a blend.

Conclusions as to Processes.

The Commission states that evidence given before it showed that in the year 1907, whereas 22,000,000 proof gallons of spirits were produced in patent-still distilleries in Scotland and Ireland, only 14,000,000 proof gallons were produced from pot-stills. There was evidence also that patent-still spirit, blended or unblended, has long been known as whisky, and that pot-stills differ so much that it would be difficult to frame a legal definition which would not either exclude certain types now commonly recognized as pot-stills, or include other types not looked upon as legitimate variations of the pot-still; on the other hand, there was no evidence that the form of still had any necessary relation to the wholesomeness of the spirit. For these reasons the Commission is unable to recommend that the use of the word "whisky" should be restricted to spirit manufactured by the pot-still process, and gives the following definition:

"Whisky" is a spirit obtained by distillation from a mash of cereal grains saccharified by the diastase of malt; "Scotch whisky" is whisky, as above defined, distilled in Scotland; and "Irish whisky" is whisky, as above defined, distilled in Ireland.

Declarations.

The Commission reports that it is not desirable to require declarations to be made as to the materials, processes of manufacture or preparation, or age of Scotch whisky, Irish whisky, or any spirit to which the term "whisky" may be applied as a trade description. "The customer," the Commission adds, "asks for a glass of whisky and gets it. As a rule, he does not ask for any particular description of whisky. The customer knows what he likes, and if he does not get it he seeks for it elsewhere."

BRANDY.

Of the total quantity of spirit imported into the United Kingdom from various foreign countries and British possessions in the year 1907, 2,194,748 gallons were shipped from France and only 149,014 from other countries.

French Brandy.

The French equivalent for the English word "brandy" is *eau-de-vie*, with this difference, that whereas in England grape spirit alone is generally meant by the term brandy, in France spirit made from wine, cider, perry, grape skins left after wine making, cherries, plums, or other fruit are included under the term *eau-de-vie*, which is also applied to any mixture of such spirits with industrial alcohol made from grain or beetroot.

Wine spirit proper—*eau-de-vie de vin*—is made in every part of France in which wine is made, but the Commission considers that there is no doubt that the best brandies, in respect of flavour and commercial value, are made in the Cognac region. Next in order of commercial merit come the brandies made in the Armagnac, including the Marmande district; a certain amount of brandy is made in the Nantes district; while large quantities are made in the Midi, in the Hérault, Gard, Aude, and Pyrénées Orientales, these brandies being commonly known as the "Trois-Six de Montpellier." The *Eaux-de-vie de Marc*, made from the residues of the wine-press, form still another class.

Cognac Brandy.

"Cognac," as the description of a spirit, is not expressly defined in the French law, but the name "eau-de-vie de Cognac," or "Cognac," simply can only be applied legally to spirits made in the Cognac region from wine grown therein. It has for some time past been generally accepted that the Cognac region comprises a certain part of the two departments of Charente and Charente Inférieure, and there has recently been a legal delimitation of the area. The region is locally subdivided into the Grande or Fine Champagne, the Petite Champagne, the Borderies, and the Bois, according to the quality of the wine produced. The soil is mainly calcareous; the grape grown is small in size and white in colour, and the wine is of inferior quality for drinking purposes.

Cognac brandy is manufactured in the Charentes both by the professional distiller and by the farmer, who grows his own grapes and makes his own wine. Several firms buy nearly all the brandy they need from the farmers.

Distillation.—The distilling apparatus in general use by both distiller and farmer is a simple pot-still, varying in size from 7 to 9 hectolitres, that is, 154 to 198 gallons. The still, which is built in brickwork, having only a small bulbous head exposed, is generally heated by means of a furnace; in a few distilleries the stills are heated by steam, and there is some controversy between distillers using these different heating agents as to the respective merits of each. Wood is very generally used in the furnaces, and is considered the best fuel. Attached to the still is a vessel called a "chauffe-vin," which acts as a wine-heater; being filled with wine, through which the pipe conveying the spirit vapour to the refrigerator passes, it does duty at once as a wine-heater and as a partial refrigerator; the wine being heated in the vessel is quickly brought to boiling point when passed into the still, and there is thus a saving of fuel. But the "chauffe-vin" is not always used, even though the stills are provided with the vessels. In the process of manufacture there are two distillations which may be compared with the process of whisky-making in the Scotch pot-still distilleries; the resulting spirits of the two distillations are termed "*brouillis*" and "*bonne chauffe*" respectively, descriptions equivalent to the "low wines" and "spirits" of the whisky distiller. In some distilleries, however, stills known by the appellation "*à premier jet*" are in use. These produce the finished spirit at one continuous distillation. Attached to and above the ordinary head of the still is a vessel into which the condensed spirit of the first distillation is conveyed, and this spirit is vaporized by the heat of the spirit vapour rising from the still itself on its way to the refrigerator. The best distillers do not consider that this still can produce the finest spirit; it is used for producing spirit of a higher strength than ordinary, and also in the manufacture of liqueurs. The stills are worked very slowly and regularly, ten hours being the normal time for completing the distillation of a charge of wine. The quality of the spirit depends greatly on the skill of the stillman in working the still.

The wine used in the manufacture of "Cognac" contains from 6 to 11 per cent. of pure alcohol, or, roughly, from 10 to 20 per cent. of proof spirit; the average strength is from 7½ to 8½ per cent. of alcohol or from 13 to 16 per cent. of proof spirit. The finished spirit is run from the still at a strength of about 25 over proof. The brandy is sweetened with cane sugar and slightly coloured, the object of colouring being merely, as in the case of whisky, to keep a given brand up to a given level of colour.

A large quantity of brandy is made in the Midi. It is of inferior quality to that produced in Cognac, but it is probably made exclusively from wine, and the comparatively slight difference between the prices of wine and of grain and wheat make it improbable that distillers in any part of the South of France would sacrifice the privilege of sending out their spirit under the special permit which is a guarantee that the brandy does not contain grain or beet spirit.

Eau de vie de Marc is a term restricted by French law to spirit derived from the distillation of the skins of fresh grapes from which the greater part of the juice has been extracted. Some such spirit is said to be very fine and to command a high price, but not much appears to be imported into this country. The Commission was informed that the "dop" brandy of South Africa is produced in this way.

Other Brandies.

The Commission states that Algerian brandies are said to be of high quality. They are distilled in Algeria from Algerian wine and sent to France, and an increasing quantity is reshipped from the Charente to this country.

According to the Customs returns, 13,048 gallons of brandy were imported from Spain during the year 1907, but the quantity has been diminishing during the last few years. There are brandy distilleries in many parts of Spain. The material used is said to be only fully fermented wine from fresh grapes, and the stills are of a comparatively simple type, similar to the "à premier jet" stills of the Charente. Spanish brandies are said to be similar in flavour to the French brandies, and to command a high price.

The grapes from which Egyptian brandy is made "are grown in Roumelia, and parts of Greece, Cyprus, and Asia Minor. The grapes are brought in fresh from the vines into Alexandria, where they are converted into wine . . . and from wine they are distilled as brandy." The Egyptian brandies apparently possess a very full flavour, and are very cheap. The Commission had evidence that, in addition to these brandies, there are some so-called Egyptian brandies which are not distilled in Egypt, and which, it was suggested, are probably made from currants grown in Greece; 57,712 gallons of brandy were entered by the Customs as imported from Egypt in 1907.

The Customs returns also show entries of considerable quantities of brandy from Germany, and small quantities from other foreign countries and British possessions.

Hamburg brandy is the name commonly given to a spirit stated to be manufactured in Germany from potato or beet spirit and flavoured so as to imitate grape brandy, and similar imitations are apparently made in the North of France, in Belgium, and in other foreign countries. British brandy is prepared by redistilling duty-paid spirits with flavouring ingredients or by adding flavouring materials to such spirit. It is often mixed with foreign, generally Cognac, brandy, and is sold largely for cooking purposes.

The conclusion of the Commission is that the term brandy is applicable to a potable spirit manufactured from fermented grape juice and from no other materials, but that the compounded spirit long sold by the name of British brandy is entitled still to be so named and sold.

RUM.

The evidence taken by the Commission was to the effect that there are two distinct types of rum, one being represented by Jamaica and the other by Demerara rum. The first type is the result of slow fermentation, lasting from ten to twelve days, of a wash set at a relatively high density; the second is the result of a rapid fermentation, lasting from thirty-six to forty-eight hours, of wash set at a low density.

For some years a cheaper imitation of rum has been made on the Continent, principally in Germany, and according to the recommendations of the Select Committee of 1891, rum is now entered under two heads:

Rum (imported from ports in sugar-cane producing countries).

Imitation rum (imported from ports in countries in which the sugar cane is not produced).

Imitation rum may not be blended or mixed in bond with "rum" for home consumption. Rum, or imitation rum and other foreign spirits, may, however, be mixed for exportation, but the word "mixed" must be marked on one head of each cask containing the mixed liquids.

The Commission defined rum as "a spirit distilled direct from sugar-cane products in sugar-cane growing countries."

GIN.

All witnesses agreed that gin should be made from cereals—maize, malt, and rye being the main materials used in the production of the original spirit; juniper berries are regarded as essential for the subsequent flavouring, but various herbs are also used by individual makers. The manufacturer of gin is generally a rectifier only, and buys the spirit he uses from patent distilleries. In the majority of cases the rectified spirit is distilled with the juniper berries and other flavouring materials in a kind of pot-still, but in some cases the flavouring materials are distilled separately and added to the alcohol afterwards. All the witnesses examined objected to the use of molasses on the grounds, first, that gin is essentially a British spirit, which the consumer expects to be made from grain, and secondly, that molasses yields a coarse spirit unsuitable far the production of gin. It was also stated in evidence that ordinary patent-still spirit flavoured with essences and not subjected to subsequent rectification was improperly sold as gin, and was often exported under the name of gin, and sold at a much lower price than the genuine article.

GENEVA (HOLLANDS).

Geneva, also called "Hollands," "Hollands Geneva," or "Hollands Gin," is imported into this country from Holland. The name "Geneva" is probably derived from the Dutch word "jenever," meaning juniper.

Although distinct in flavour, the spirit is similar in many respects to English gin, inasmuch as in both cases the genuine article is made from grain only and flavoured with juniper.

Geneva is now made from a mixed mash of malted barley, rye, and maize in more or less equal proportions. The whole mash is fermented together and is then distilled three times in a pot-still, the result being a spirit called "*moutwijn*," or maltwine. The *moutwijn* is then redistilled, and juniper berries and other flavourings added.

The Geneva manufacturers do not make the *moutwijn* themselves, this spirit being made, in Schiedam in the main, in small pot-stills and bought through brokers.

It would appear that a practice has grown up of selling under the name of Geneva a spurious spirit produced by a mixture of molasses spirit with a little Schiedam *moutwijn*. Some attempt was made by the Municipality of Schiedam to institute a form of control by which genuine Hollands Geneva could be guaranteed, but the system does not appear to have met with much success.

LIQUEURS.

The name "liqueur" is, as a rule, applied to imported sweetened spirits—that is to say, to spirits to which any matter has been added after distillation, which imparts to it the quality of sweetness, and reduces the apparent alcoholic strength as determined from its specific gravity. British products of the same class are usually called "cordials."

Liqueurs and bitters have no defined alcoholic strength; the alcohol is merely a solvent for the flavouring essences. Liqueurs of the best quality are generally made with old spirit, but new spirit is probably used for the manufacture of the cheaper articles. Some foreign countries have placed restrictions upon the sale of certain liqueurs, owing to the toxic character of the materials used in their manufacture. The sale of absinthe, for example, has been entirely prohibited in Switzerland, and in France it can only be sold at a high alcoholic strength with a correspondingly small proportion of wormwood extract. The quantity of absinthe consumed in this country is very small.

LEGISLATIVE ACTION.

With regard to compounded spirits generally the Commission reports as follows:

We have been unable to recommend any restrictions upon the numerous materials used in the preparation of gin, Geneva, and other compounded spirits which are known to the British trade, or upon the processes which are employed in their manufacture. In the absence of information as to the nature of the materials

employed we can express no opinion on the wholesomeness or otherwise of particular compounds, but we received no evidence that any spirits of this nature (with the exception of absinthe) have a specially toxic action.

The Commission does not recommend the adoption of the ether standard—that is to say, the presence of a certain proportion of ethers as a test of genuine brandy. Dr. Fernbach, the Principal of the Fermentation Department of the Pasteur Institute, Paris, showed that the proportion of ethers in genuine Cognac brandies was sometimes below the limit proposed to be fixed by the standard. In order to form a reliable opinion it is necessary to take into account all the usual analytical data, and in addition the character of the spirit as regards flavour and any other information obtainable from the Excise Record as to the origin of the sample. On this point the Commission reports:

While admitting the possibility of highly rectified wine spirit, flavoured with essences, being sold as brandy, we doubt whether the practice is sufficiently common to warrant any attempt being made to limit the extent of rectification which may be permitted. But, even if it were so, we consider that it would be very difficult to enforce such a limitation, and we observe that no attempt has been made to do this under the French law.

Our conclusion, therefore, is that the determination of the application of the term "brandy" in this country cannot be controlled by the nature of the apparatus or process used in the distillation of the spirit.

Although, however, it is impossible, with our present limited knowledge of the composition and properties of the secondary constituents, to establish trustworthy chemical standards for controlling the description of potable spirits, we are nevertheless satisfied that chemical analysis is capable of affording very important assistance in many, if not in all, cases of suspected misdescription, when the results of analysis are taken in conjunction with other evidence, such as that of the expert taster, and Excise records when obtainable and when a common practice as regards methods is employed.

In order to assist in a more certain conducting of prosecutions under the Sale of Food and Drugs Acts it may be well to consider whether statutory provision may not be made for affording to the presiding magistrate assistance in determining the cases submitted to him by authorizing him to obtain, if he thinks fit, the assistance of two assessors, being persons of practical or scientific knowledge of the matters involved, to sit with and advise him thereon. And for such purpose it may also be desirable to form under authority a panel from which such assessors may be selected.

It is also desirable to consider whether a Committee of skilled persons may be formed under Governmental authority, who might assist in mitigating some of the difficulties mentioned above by advising on technical questions which affect the administration of the Acts by local authorities and the practice of public analysts.

LITERARY NOTES.

THE first number of *Heart*, a new periodical to which attention was called in the JOURNAL some time ago, contains much matter of first-rate quality. Professor Cushny contributes a paper on the irregularities of the mammalian heart observed under aconitine and an electrical stimulation. Dr. James Mackenzie discusses nodal bradycardia, and Dr. Thomas Lewis deals with paroxysmal tachycardia. Dr. Leonard Hill treats of the measurement of systolic blood pressure in man. The journal, which is published by Messrs. Shaw and Sons, Fetter Lane, E.C., is excellently printed, and the tracings and charts are very clear. We fully agree with what Dr. W. H. Gaskell says in his prefatory note that *Heart* "will be of great value to the medical man, as it will focus together the work of the laboratory and the work of the hospital ward; and to the physiologist, because during his investigations it will keep ever present to his mind the nature of the problems which, in the opinion of the medical man, are pressing urgently for solution." The editor is Dr. Thomas Lewis. Our new contemporary will occupy a place in the current literature of medical science, which, as far as English is concerned, has hitherto been unfilled.

Shakespeare refers to stage fright; perhaps he had personal experience of the feeling. In his Sonnets (XXIII) he says:

> As an imperfect actor on the stage,
> Who with his fear is put beside his part,
> * * * * *
> * * * * *
> So I, for fear of trust, forget to say
> The perfect ceremony of love's rite.

M.D. writes: "Can nothing be done to improve the composition of writers on medical subjects? It would indeed be a mercy if, in these days, when new books are but too numerous, authors would refrain a little longer, and study their grammars. From a recent periodical I give some extracts:—

"'A Cambridge B.A.' writes:

In the former condition vaso-dilators will tend to *slow* the blood current, in the latter condition, *it* will lower the pressure.

No dictionary to which I have access gives a verb 'to slow' and the pronoun 'it' is obviously wrong. In the next article 'M.B., B.S.Lond.' writes:

For it may be said that the use of the one or the other determines the action taken by many in regard to the attitude they assume towards the employment of . . . .

Surely a fine example of obscure prolixity! In the article immediately succeeding, 'M.A., M.D.Camb.' begins as follows:

The diagnosis of arterio-sclerosis, apart from certain cases of raised arterial blood-pressure, which afford valuable evidence of early arterial changes, is, generally speaking, only made when the condition is obvious by aid of the finger and the eye.

I fear I am too stupid to understand what is meant. The same writer proceeds:

It would seem, however, to be a matter of high importance that the physician should be able to detect in its early stage the process which leads to arterio-sclerosis, a much to be desired result, which may possibly be achieved by studies of the alterations in function of the arteries in this pathological condition or conditions.

Please tell me, is arterio-sclerosis a much to be desired result?

"This article is followed by one on rheumatism by 'M.D., B.S.Lond.,' who writes:

To those who have kept themselves fully informed . . . . *one can hope to tell nothing new.*

I suppose he means 'one cannot hope to tell anything new.' And a little further on:

And even now we find it difficult *to accurately separate off* certain cases, etc.

Shade of Lindley Murray!

"Now, Sir, these four consecutive papers are one and all distinctly good in my poor opinion. At the lowest estimate they bear evidence of laborious research, and it does seem a pity that a little further trouble was not taken to make them as readable as they are valuable."

In his last book, *La Chemise*, Anatole France has some sly hits at the medical profession. King Christophe V complained of loss of appetite, pains in the loins, weight in the stomach, shortness of breath and palpitations of the heart, headache, giddiness, cramp—in short, of all the ailments catalogued in quack advertisements and Christian Science "testimonies of healing." Naturally his two chief physicians, Dr. Saumon and Professor Machellier made the diagnosis of "neurasthenia." The condition is described by one learned leech with judicious vagueness as an "imperfectly defined morbid entity." The other discourses on it in more eloquent if not more enlightening fashion as a "veritable pathological Proteus who like the Old Man of the Sea, transforms itself ceaselessly in the grasp of the practitioner and assumes the most grotesque and terrifying appearances; by turns the vampire of a gastric ulcer or the snake of a nephritis, suddenly it displays the yellow face of jaundice, shows the hectic cheeks of tuberculosis, or twines strangling hands which would make one believe that it has hypertrophied the heart; at last it presents the spectre of all the ills that afflict the human body, till, yielding to medical art and owning itself beaten, it flies away in its proper figure of ape of diseases." Saumon was handsome and popular with women; he recognized aristocracy even in a caecum and a peritoneum, and was careful in his regard of the social distances which separated one uterus from another. Machellier, short and stout, was copious in speech. He and his professional brother hated each other; but having noticed that in fighting they destroyed each other, they affected a perfect understanding and a full agreement in opinion; one had no sooner expressed an opinion than the other made it is own. Although having a mutual contempt for each other's intelligence, one was not afraid to borrow the other's opinion, "knowing that there was no risk in doing so, and that they would neither